



**ST JOSEPH'S UNIVERSITY, BENGALURU -27**  
**M.Sc. Biotechnology- I SEMESTER**  
**SEMESTER EXAMINATION: OCTOBER 2023**  
**(Examinations conducted in November/December 2023)**  
**BT 7322: MICROBIOLOGY AND MOLECULAR GENETICS**  
**(For current batch students only)**

Registration Number:

Date & session:

**Time: 2 hours**

**Max Marks: 50**

**This paper contains ONE printed page and THREE parts**

**PART A**

**Answer any SEVEN of the following**

**2m x 7 = 14 marks**

1. Give an account of bacterial diversity based on their cell wall characteristics.
2. What are signature sequences? Give an example.
3. How do the methods that study polygenes differ from those that study Mendelian genes? Why?
4. What is allopatric speciation? Give an example.
5. What are CpG islands? What is their role in epigenetics?
6. What are gene families? Which genetic phenomena are essential for their origin?
7. What is genetic load? What does it indicate?
8. What are forward mutations? What would the dominance status be of these mutant alleles?
9. What is GWAS?

**PART B**

**Answer any FOUR of the following:**

**5m x 4 = 20 marks**

10. Give a detailed account on the epidemiological markers that help trace the origin of a disease outbreak.
11. What are antiviral compounds? Explain the mode of action of any one.
12. Explain the structural organization of prokaryotic genetic material.
13. Explain the packaging of genetic material into spherical viruses.
14. Explain the use of mutants in genetic study.
15. What is the multiple factor hypothesis? Explain with the help of a suitable example.

**PART C**

**Answer any TWO of the following:**

**8m x 2 = 16 marks**

16. Describe in detail the molecules possessed by pathogenic bacteria that enable them to cause disease in a host.
17. Why is the Human Genome Project important?
18. What are molecular markers? What are their uses in biotechnology?